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PATENT APPLICATION

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Gerhard HARTWICH  
Serial no. : 09/889,326  
Filed : with an effective filing date of January 7, 2000  
For : METHOD FOR ELECTROCHEMICALLY  
DETECTING NUCLEIC ACID-OLIGOMER  
HYBRIDISATION EVENTS  
Group Art Unit : 1634  
Examiner : Arun K. Chakrabarti  
Docket : PATKRI P02AUS

The Commissioner of Patents and Trademarks  
Washington, D.C. 20231

## RESPONSE

Dear Sir:

This response is being filed in reply to the office action mailed September 23, 2002. In that action, the Examiner has required restriction under 35 U.S.C. 121 between the following groups of claims:

- I. Group I claims 1-20, drawn to modified nucleic acids;
- II. Group II claims 21-28, drawn to method of making modified nucleic acids;
- III. Group III claims 29-43, drawn to a modified conductive surface;
- IV. Group IV claims 44-47, drawn to method of making modified conductive surface;
- V. Group V claims 48-55, drawn to method of nucleic acid hybridization.

## REMARKS

The above-described restriction requirement has been directed toward claims 1-55, the original claims filed in the corresponding International Application, PCT/EP00/00084. By virtue of the Preliminary Amendment filed simultaneously with the current U.S. Patent Application (07/11/2001), however, claims 1-55 have been canceled in favor of new claims 56-126. For purposes of addressing the current restriction requirement, pending claims 56-126 correspond to original claims 1-55 as set forth below.

09/889,326

<u>Group</u>	<u>Old Claims</u>	<u>New Claims</u>	<u>Subject Matter</u>
I	1-20	56-82	modified nucleic acids
II	21-28	83-91	method of making I
III	29-43	92-112	modified conductive surfaces made from I
IV	44-47	113-116	method of making III
V	48-55	117-126	method of detecting nucleic acid hybridization with III

The Applicant provisionally elects the invention disclosed in Group I (original claims 1-20, pending claims 56-82) and it is requested that, without further action thereon, claims 83-126 be retained in this application pending disposition of this case and for possible filing of (a) divisional application(s).

The Examiner is of the opinion that United States Patent No. 5,770,369 ("the '369 patent") discloses all the elements of claim 1, group I, and accordingly the claims of groups II-V lack the same or corresponding special technical features. It is noted that such an *a posteriori* finding of lack of unity of invention requires a presumption of lack of novelty or inventive step in a main claim so that there is no technical relationship left over the prior art among the different groups. It is respectfully submitted that the restriction requirement in general, and particularly with regard to the citation of the '369 patent, is misplaced with regard to pending claims 56-126.

The '369 patent discloses nucleic acid oligomers modified by covalent attachment of redox active compounds, thus providing a system for binding an oligonucleotide modified with a redox active organic molecule to an electrode (column 11, lines 1 to 12).

Original claim 1 and pending claim 56 of the present application require the presence of at least two molecules within one redox-active unit, i.e., the presence of at least one electron donor moiety and at least one electron acceptor moiety. These two moieties may be connected to each other by a spacer (structure 2, page 34), however, this is not mandatory as shown by structure 1 (page 34).

09/889,326

In contrast, the '369 patent discloses nucleic acid oligomers modified by covalent attachment of two redox-active groups, one electron donor group and one electron acceptor group (see Figs. 1 and 2 of the '369 patent). Please note that Figs. 1 and 2 of the '369 patent illustrate all the possible orientations of electron donor and electron acceptor groups on nucleic acid oligomers (column 5, lines 43 to 50).

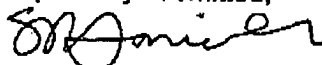
It is readily appreciated that the '369 patent does not disclose or suggest a nucleic acid oligomer modified by a redox active unit in which the redox active unit, as required by independent claim 56 (and original claim 1) of the present application, contains at least one electron donor moiety and at least one electron acceptor moiety. Furthermore, pending main claim 56 defines a modified nucleic acid oligomer in which the electron donor moiety and the electron acceptor moiety are **not** interconnected by a nucleic acid oligomer (a feature inherent in the invention described and claimed in the '369 patent, thus rendering the claims of the present invention and the disclosure of the '369 patent mutually exclusive. Accordingly, there is clearly no presumption of lack of novelty or inventive step in claim 56 over the '369 patent, as required by PCT Rule 13.1.

In conclusion, independent claim 56 recites a common general inventive concept (a nucleic acid oligomer modified by a redox active unit in which the redox active unit contains at least one electron donor moiety and at least one electron acceptor moiety, and in which the electron donor moiety and the electron acceptor moiety are **not** interconnected by a nucleic acid oligomer) as required by PCT Rule 13.1, in order to satisfy the unity of invention requirement.

09/889,326

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service, with sufficient postage, as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on October 23, 2002.

By: Print Name: Scott A. Daniels